ASTER IMAGERY OF ANTARCTICA: GEOGRAPHIC COVERAGE, DATA AVAILABILITY AND GLACIOLOGICAL APPLICATIONS

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The ASTER sensor onboard NASA's Terra satellite has been collecting high-resolution satellite imagery since March 2000. An aggressive imaging schedule and the use of appropriate gain settings for snow and ice ensure extensive coverage of much of the Antarctic ice sheet. Key characteristics of the imaging system include: good radiometric resolution provided by 14 spectral bands ranging from VNIR through TIR; 15 m resolution in the three VNIR bands; stereo imaging capabilities with nadir and backward looking telescopes; and off-nadir scene acquisition capabilities. The orbital characteristics and off-nadir pointing mean that imagery can be acquired as far south as ~84 S. Each scene covers a nominal ground swath of 60 x 60 km. Data are available via the Land Processes DAAC (http://edcimswww.cr.usgs.gov/pub/imswelcome/) at a nominal cost of $55/scene or free to approved investigators; higher level products such as DEMs are available at no-cost. Numerous Antarctic scenes are archived at UMaine. ASTER imagery is well-suited to polar glaciology. We shall present examples of DEM generation, velocity mapping using automatic feature tracking, and changes in frontal extent of small ice shelves.